Adult and Higher Education (2025)
Clausius Scientific Press, Canada

DOI: 10.23977/aduhe.2025.070402
ISSN 2523-5826 Vol. 7 Num. 4

Research on Collaborative Learning of College Students Based on Internet Learning Platforms

Jun Ma

College of Educational Science and Technology, Northwest Minzu University, Lanzhou, 730000, Gansu, China
364221500@qq.com

Keywords: Online Platform; Collaborative Learning; Learning Support Technology

Abstract: Abundant internet learning resources provide a completely new learning environment for college students' collaborative learning. This new type of learning is more open, flexible, and efficient compared to traditional collaborative learning, and is not limited by geography or time. By analyzing the concept and characteristics of collaborative learning based on online resources, the meaning of collaborative learning based on online resources can be clarified, and the role of related learning support technologies can be identified to better utilize learning support technologies to optimize learning quality. Taking online collaborative learners at Northwest Minzu University as the research subject, the study investigates and analyzes the existing problems under collaborative learning with online resources. It was found that learners lack mastery of relevant technologies, and there is a low frequency of communication among collaborative learners, and strategies to improve the quality of collaborative learning under online resources are discussed based on these issues. The study randomly selected some students from Northwest Minzu University as the research subjects, collecting various information about the research subjects to study in order to understand the role of information technology and multimedia technology in collaborative learning and the existing problems in collaborative learning based on online resources.

1. Analysis of the Supporting Role of Technology Based on Online Resources for Collaborative Learning

The study randomly selected some students from Northwest Minzu University as the research subjects, collecting various information about the research subjects to study in order to understand the role of information technology and multimedia technology in collaborative learning and the existing problems in collaborative learning based on online resources [1].

This survey randomly selected some students from Northwest Minzu University who use the internet for collaborative learning as the research subjects, mainly to understand learners' understanding of related support technologies for collaborative learning based on online resources: information technology and multimedia technology, as well as the current problems faced by learners [2]. A total of 180 questionnaires were distributed, and 130 valid questionnaires were finally collected, and the internationally common social science statistical software SPSS tool was

used to analyze the data [3].From the analysis of this questionnaire, it can be seen that the role of information technology in collaborative learning based on online resources mainly includes:

1.1 Providing Rich Learning Resources

Table 1 Providing rich learning resources

Provide rich learning resources	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
Proportion	8%	12%	15%	45.8%	19.2%

From Table 1, we can see that among the options where information technology can provide rich learning resources for learners, 45.8% of students agree, and 19.2% of students strongly agree, with 15% uncertain, 12% disagree, and 8% very disagree. Most learners feel that using information technology can collect the information they need, while also enriching the space for autonomous learning. Abundant learning resources are the foundation for changing and enhancing the diversity of collaborative learning methods [4].

1.2 Broadening Students' Learning Paths

Table 2 Broadening students' learning paths

Broaden learning paths	Very disagree	Disagree	Uncertain	Agree	Very agree
Proportion	10%	15.6%	9.5%	47.2%	17.7%

From Table 2, it can be seen that among the options where information technology can broaden learners' learning paths, 10% choose very disagree, 15.6% choose disagree, 9.5% choose uncertain, 47.2% choose agree, and 17.7% of learners chose very agree. Therefore, the development of information technology has enriched students' learning paths. Students can use online resources to collect various information needed. Learning with information technology not only enriches learners' experiences but also stimulates learners' interest in learning.

1.3 Changing the Interactive Relationship in the Learning Process

Table 3 Changing interactive relationships

Change interactive relationship	Very disagree	Disagree	Uncertain	Agree	Very agree
Proportion	9%	18.4%	20.6%	41%	29%

From Table 3, among the options where information technology can change the interactive relationship in the learning process, 9% very disagree, 18.4% disagree, 20.6% uncertain, 41% agree, and 29% very agree.

Therefore, information technology not only promotes the exchange between learners and media learning objects, but also changes the relationship with teachers, among learners, and between students and learning objects. Students do not establish connections through teachers and learning objects, but directly connect with learning objects through interactive media. This increases learners' options and expands learners' learning paths [5].

1.4 Promoting Learners' Evaluation and Reflection

Table 4 Promoting evaluation and reflection

Promote evaluation and reflection	Very disagree	Disagree	Uncertain	Agree	Very agree
Proportion	12%	18%	9%	39.6%	21.4%

From Table 4, it can be concluded that 61% of learners believe that the application of information technology can promote reflection and evaluation of learning, while 30% disagree.

Information technology can achieve diversity and objectivity in assessment. More use of formative assessment, focusing on learners' self-evaluation, and through continuous assessment and feedback, adjust learning strategies and methods to better suit learners' habits.

2. The role of multimedia technology in promoting collaborative learning based on online resources

The change in people's traditional thinking depends on the emergence of modern multimedia technology. The learning model expected by learners is gradually being realized, and audiovisual teaching materials are filled with color beauty and three-dimensional beauty, gradually replacing the dull traditional teaching activities [6]. The role of multimedia technology in collaborative learning based on online resources is mainly:

Table 5 The role of multimedia technology

	Very disagree	Disagree	Uncertain	Agree	Very agree
Strengthen learner memory	8%	10%	5%	50%	27%
Improve learning efficiency	5%	12%	12%	49.5%	21.5%
Provide a variety of reference information	3%	6%	10%	51.6%	29.4%
Build a harmonious and active online classroom atmosphere	4%	9%	16%	56.7%	14.3%

From Table 5, it can be seen that among the options where multimedia technology can strengthen learners' memory, 77% choose agree and very agree; those who think it can improve learning efficiency agree and very agree with 71%; among those who agree and very agree that multimedia can provide a variety of reference information are 81%; those who think multimedia can build a harmonious and active online environment agree and very agree with 71%. According to Table 5, it can be concluded:

2.1 Strengthen learner memory

Multimedia technology can strengthen learner memory mainly because multimedia technology can simulate a real learning environment, allowing learners to receive information simultaneously, thereby improving the quality of learning [7].

2.2 Improve learning efficiency

Multimedia technology can transform abstract content into concrete content. Different learners can adapt to their own different cognitive forms when applying multimedia technology.

2.3 Provide a wealth of learning materials

Multimedia technology can help learners easily obtain any information needed. Because multimedia technology can accommodate a considerable amount of resources, learners can quickly obtain the resources needed, which greatly ensures the smoothness of the learning process [8].

2.4 Build a harmonious and active online classroom atmosphere

Interactivity is one of the characteristics of multimedia, and students can use virtual collaboration platforms for cooperative communication, even though they may be far apart geographically, changes on the screen are part of their communication. Multimedia technology can

help students overcome shyness and let them speak freely.

3. Problems in collaborative learning using online resources

3.1 The level of mastery of technology is not high

Table 6 Can handle technical problems well

Can handle technical problems in learning	Very disagree	Disagree	Don't know	Agree	Very agree
Proportion	20%	46.1%	10%	13.5%	10.4%

From Table 6, among the collaborative learning based on online resources, 66.1% of learners cannot handle technical problems well. In online learning based on the network, the level of mastery of technology by learners will directly affect the quality of learning. And only 23.4% of learners can solve technical problems related to collaborative learning on their own.

3.2 The individual sense of responsibility among collaborative learners is not strong

Table 7 Personal Sense of Responsibility

Believes their sense of responsibility is strong	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
Proportion	16.9%	36.9%	10.2%	15%	21%

From Table 7, it can be concluded that 53.8% of learners in collaborative learning based on online resources have a weak sense of responsibility in the process of collaborative learning. It is evident that most learners do not recognize the true significance of collaborative learning

3.3 Low Frequency of Group Communication

Table 8 Communication Frequency and Methods

High frequency of communication with partners	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
Proportion	20%	30.2%	19.3%	9.6%	20.9%

From Table 8, it can be seen that 30.5% of collaborative learning groups have a high frequency of communication, while 50.2% of collaborative learners have a low frequency of communication. Collaborative learning requires learners to communicate with each other to better promote collaborative learning and improve learning quality [9].

4. Strategies for Collaborative Learning Supported by Online Resources

4.1 Proficient Mastery of Information Technology and Multimedia Technology

One of the prerequisites for online collaborative learning is to have a certain level of mastery of information technology and multimedia technology, so students must strengthen their learning and mastery of knowledge and technology. However, in collaborative learning based on online resources, the level of mastery of information technology by learners is quite uneven. At present, there are still quite a few schools that have not offered information technology courses, leading many learners to be at a disadvantage in terms of mastering information technology, making it very difficult for them to participate in collaborative learning based on online resources. Moreover, with the current diverse online resources, learners with weaker self-control abilities may be affected and have their attention diverted [10]. Learners can take supplementary courses at relevant educational institutions before starting collaborative learning based on online resources, allowing themselves to

master more information technology, recognize the value and importance of information technology and multimedia technology, and also feel the fun and convenience of using them to promote learning [11].

4.2 Strengthen Collaborative Awareness and Enhance Individual Sense of Responsibility

Learning based on online resources should emphasize the spirit of collaboration among learners. Learners interact effectively through online learning platforms and learn effectively in the process of interaction. Learners actively participate, evaluate each other, experience the outcomes of collaborative learning, and at the same time strengthen their sense of collaborative learning. Individual responsibility is one of the basic elements of collaborative learning, so learners must grasp the tasks assigned while undertaking learning tasks [12].

4.3 Value Various Technical Tools for Effective Support of Online Collaborative Learning

In collaborative learning based on online resources, learners need to collect necessary information according to learning objectives or tasks. Learners can use keyword searches to retrieve the information they need from a wide variety of online resources. In collaborative learning based on the network, different tools can be used to better support collaborative inquiry activities. For example, well-known domestic online learning tools can be utilized, and online learning communities, QQ groups, etc. can be established to create various online communication platforms. With the use of various platforms, collaborative learners can use tools to better exchange their ideas, discuss with each other, and further enhance learning [13].

4.4 Pay Attention to Individual Differences and Form Efficient Online Collaborative Learning Groups

Online questionnaire surveys can help us understand the impact of learning motivation, interests, and knowledge base on learners in collaborative learning based on online resources [14]. There are many websites that provide online questionnaire surveys, and we can use them to understand learners in different places. Among them, for understanding the knowledge base, electronic questionnaires can be used to gather some information about learners, which can be filled out by the learners themselves or by their teachers in real life. Through these methods, we can understand learners and propose more efficient grouping forms to improve the quality of learning.

4.5 Improve Collaborative Learning Skills to Optimize Learning

Under online resources, collaborative learning is a learning activity in which learners participate. In the real process of participation, learners can directly acquire knowledge, engage in the learning process, and at the same time improve their computer operation skills [15]. After the preparation work for collaborative learning is completed, learners should carry out learning activities around the learning content and design different discussion methods according to different learning content [16]. Under the collaborative learning model, in order to improve learners' enthusiasm for learning, the themes of learning activities should be rich and colorful. Collaborative learning under online resources can both discuss online learning and conduct debates online to elaborate on their own or team's viewpoints. Learners in the collaborative learning process should have good organizational and planning abilities to truly understand the effectiveness of collaborative learning from the learning process.

5. Conclusion

In response to several issues: the level of mastery of technology is not high; the sense of individual responsibility among collaborative learners is not strong; the frequency of communication among small groups of authors is low. It is evident that there are still many deficiencies in collaborative learners based on online resources. Solving these problems is particularly urgent under the current circumstances [17]. Proficiently master information technology and multimedia technology; strengthen the sense of collaboration and enhance individual responsibility; value various technical tools for effective support of online collaborative learning; pay attention to individual differences and form efficient online collaborative learning groups; improve collaborative learning skills to optimize learning.

References

[1] Liang, S.(2010).Research on the Application of Collaborative Learning Based on Online Resources in the "E-commerce Training" Course .Business Culture (Academic Edition), (05), 215-216.

[2] Chen, R.(2017) Research on Collaborative Learning in High School Physics Online Teaching. Communication World, (23), 294-295.

[3] Dong, S. (2017).Research on the Application of Network Collaborative Learning in High School Information Technology Teaching. Good Parents, (51), 68-71.

[4] Meng, H, H.(2014). Yang Xiaohong, Cui Xiangping. Analysis of the Current Status and Trends of Inter-school Collaborative Learning Based on the Network. Research in Educational Modernization,, 35(12), 56-62.

[5] Zhang, Z, D. (2017). Research on Collaborative Learning in High School Physics Online Teaching. New Curriculum (Bottom), (06), 26.

[6] Mao, Y. (2015). Exploration of Collaborative Learning Model for Higher Vocational English Based on the Network. Talent and Wisdom, (01), 133-134.

[7] Lin, L. (2017). Tacit knowledge, explicit knowledge and Zeno's circle of knowledge: On the relationship between implicit and explicit knowledge in second language acquisition. Data of Culture and Education, (26), 23–24.

[8] Rao, C. (2017). A decade of foreign research on explicit and implicit learning: A review. Oversea Chinese Education, (5), 13–16.

[9] Li, X. (2015).The application of tacit and explicit knowledge in college English reading instruction. Journal of Xinzhou Teachers University, 31(1), 112–114.

[10] Zhou, X., & Tang, L. (2016).A review of explicit and implicit knowledge in second language acquisition. Modern Chinese, (6), 11–13.

[11] Zhou, W. (2014).An empirical study of the interface between explicit and implicit knowledge in second language acquisition among English majors. Journal of Inner Mongolia University of Technology (Social Sciences Edition), 23(1), 103–107.

[12] Zhu, X. (2014).An analysis of "explicit" and "implicit" in second language acquisition. Modern Chinese (Language Research Edition), (9), 116–118.

[13] DeKeyser, R. (2000). The robustness of critical period effects in second language acquisition. Studies in Second Language Acquisition, 22(4), 499–533.

[14] Ellis, N. C. (2002). Frequency effects in language processing and acquisition. Studies in Second Language Acquisition, 24(2), 143–188.

[15] Ellis, R. (2005). Measuring implicit and explicit knowledge of a second language. Studies in Second Language Acquisition, 27(2), 141–172.

[16] Reber, A. S., Walkenfeld, F. F., &Hernstadt, R. (1991). Implicit and explicit learning: Individual differences and IQ. Journal of Experimental Psychology: Learning, Memory, and Cognition, 17(5), 888–896.

[17] Ullman, M. T. (2004). Contributions of memory circuits to language: The declarative/procedural model. Cognition, 92(1–2), 231–270.